

**Total Maximum Daily Load of Nutrients and Dissolved Oxygen  
Under Low-Flow Conditions in the Christina River Basin,  
Pennsylvania, Delaware, and Maryland**

**Appendix A1**

Presented in this appendix are longitudinal transect graphs showing the daily average and minimum dissolved oxygen for each of the following 12 stream reaches:

1. Brandywine Creek main stem
2. Brandywine Creek East Branch
3. Brandywine Creek West Branch
4. Buck Run
5. Christina River (tidal reach downstream of Smalleys Pond)
6. Christina River (non-tidal reach upstream of Smalleys Pond)
7. Christina River West Branch
8. Red Clay Creek main stem and East Branch
9. Red Clay Creek West Branch
10. White Clay Creek main stem and Middle Branch
11. White Clay Creek East Branch
12. Delaware River (from Reedy Point, DE to Chester, PA)

Each longitudinal graph shows the following:

- DO average or minimum Water Quality Standard (i.e., TMDL endpoint)
- Model results for NPDES discharges at their existing permit loads
- Model results for NPDES discharges at their final TMDL allocation loads
- Stream flow is in the downstream direction, i.e., from higher to lower river mile

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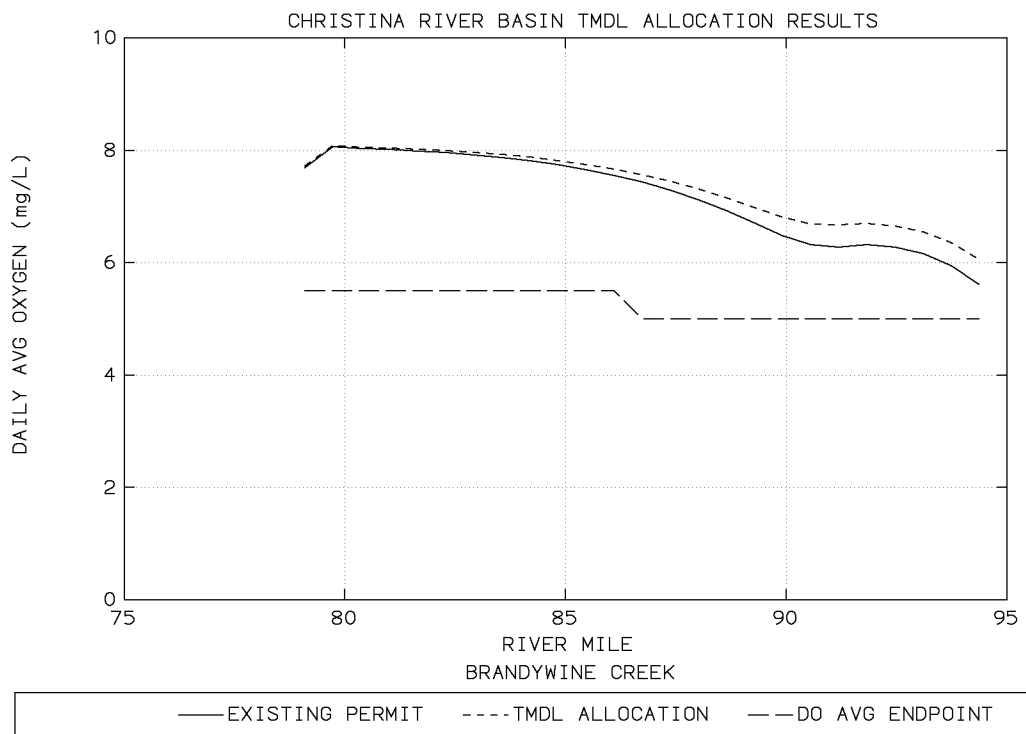


Figure A-1. Brandywine Creek main stem, daily average DO.

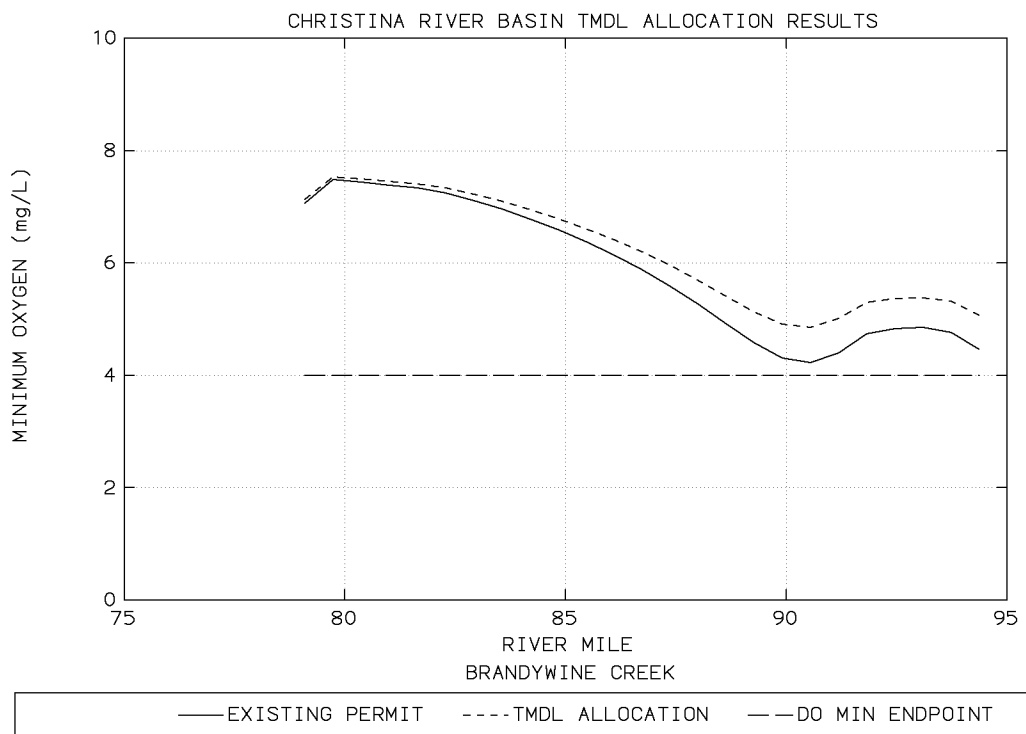


Figure A-2. Brandywine Creek main stem, minimum DO.

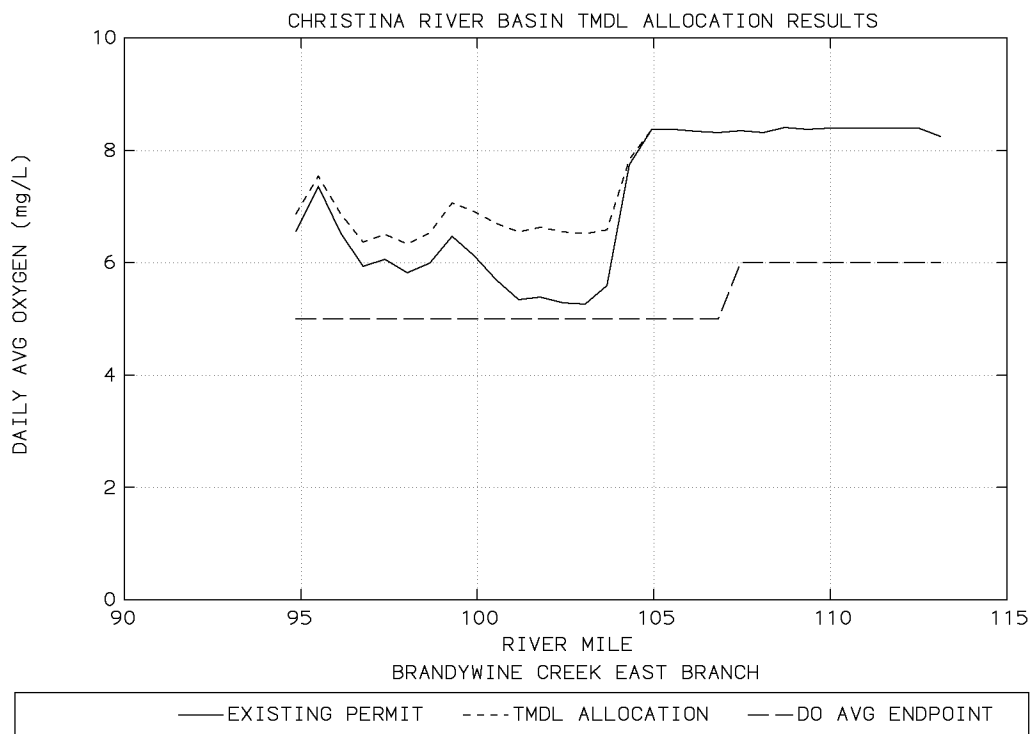


Figure A-3. Brandywine Creek East Branch, daily average DO.

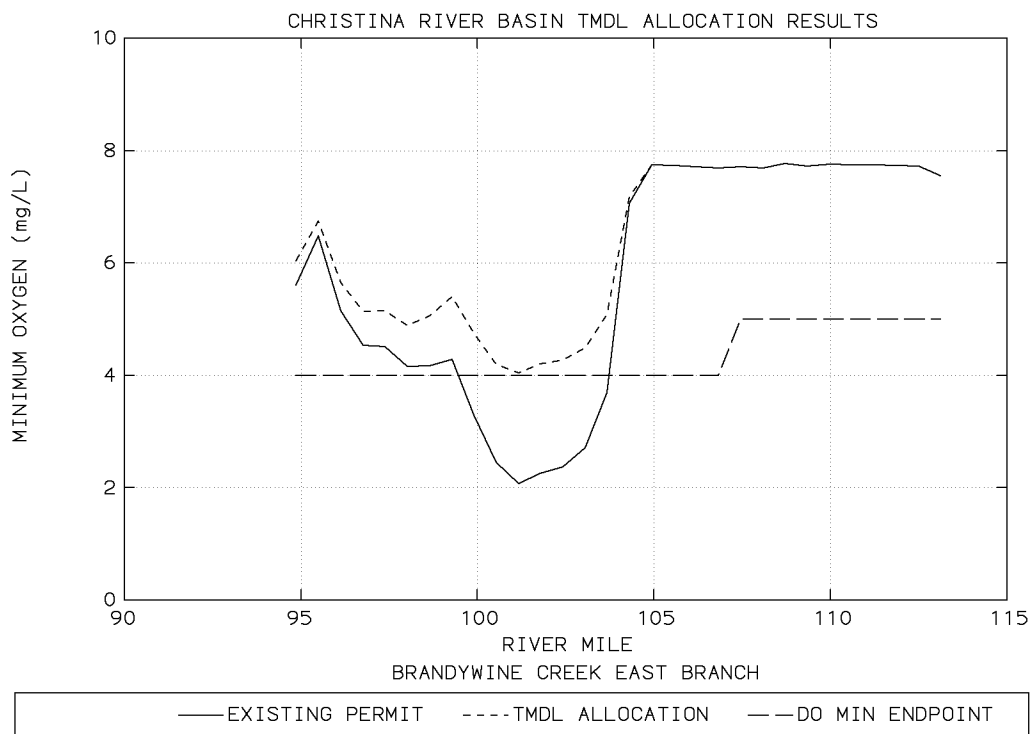


Figure A-4. Brandywine Creek East Branch, minimum DO.

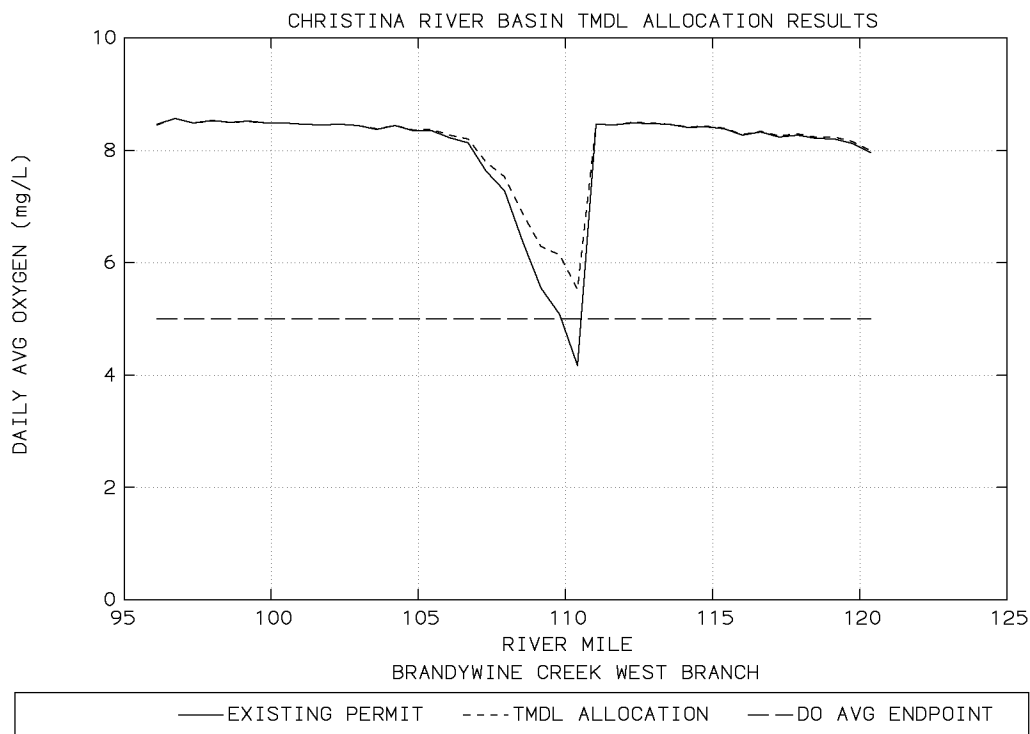


Figure A-5. Brandywine Creek West Branch, daily average DO.

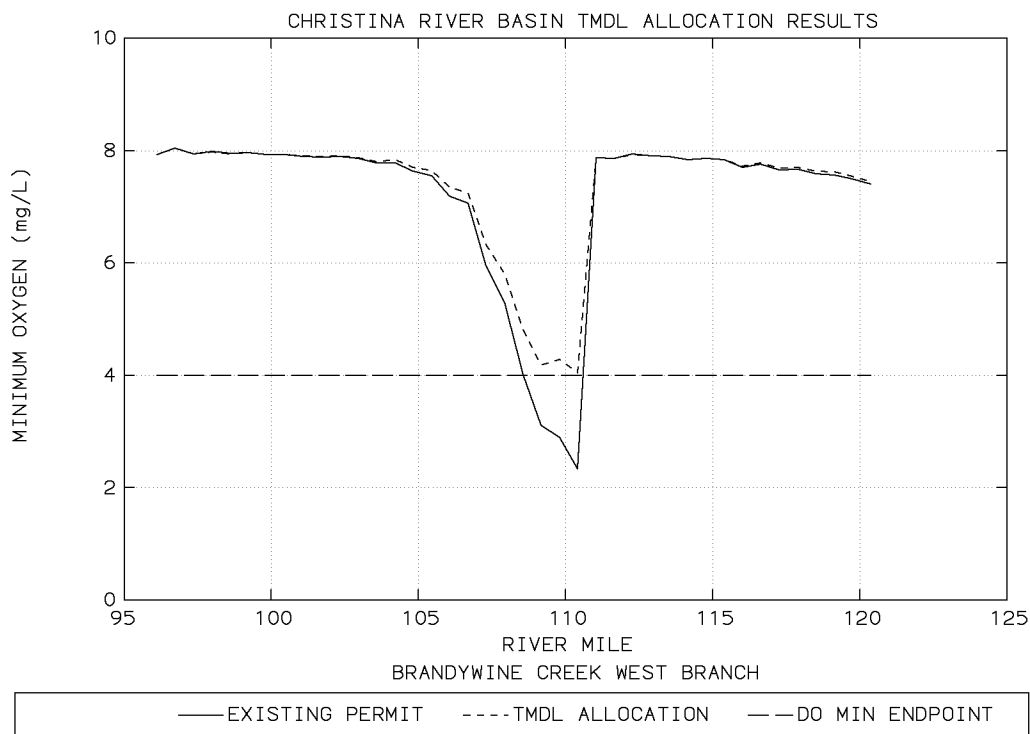


Figure A-6. Brandywine Creek West Branch, minimum DO.

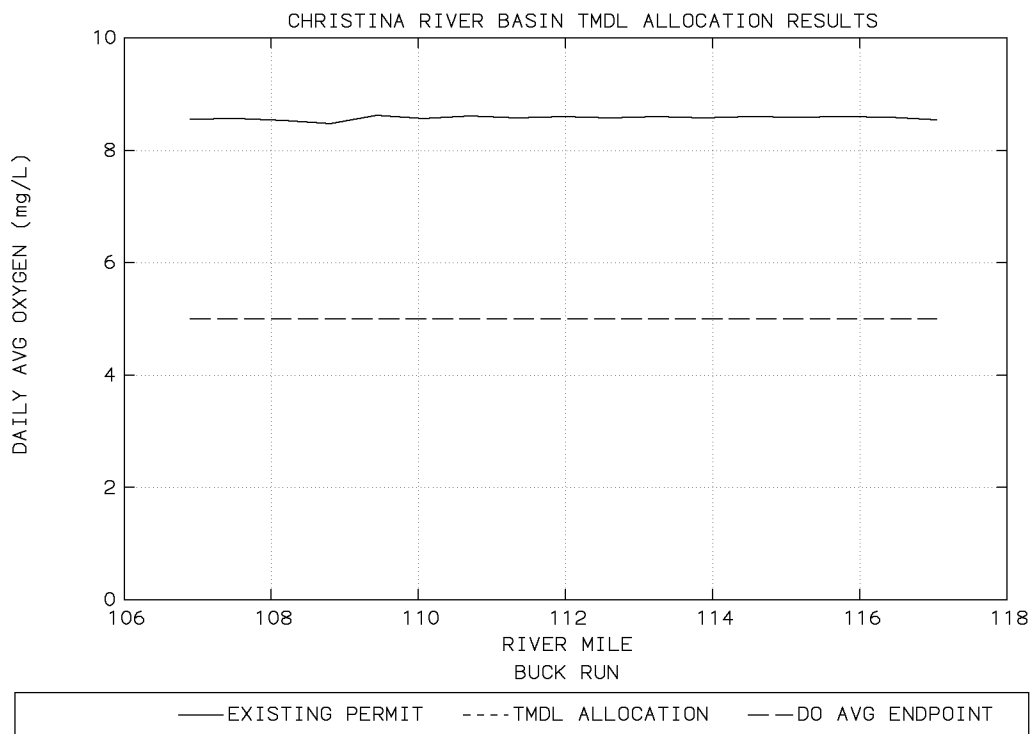


Figure A-7. Buck Run, daily average DO.

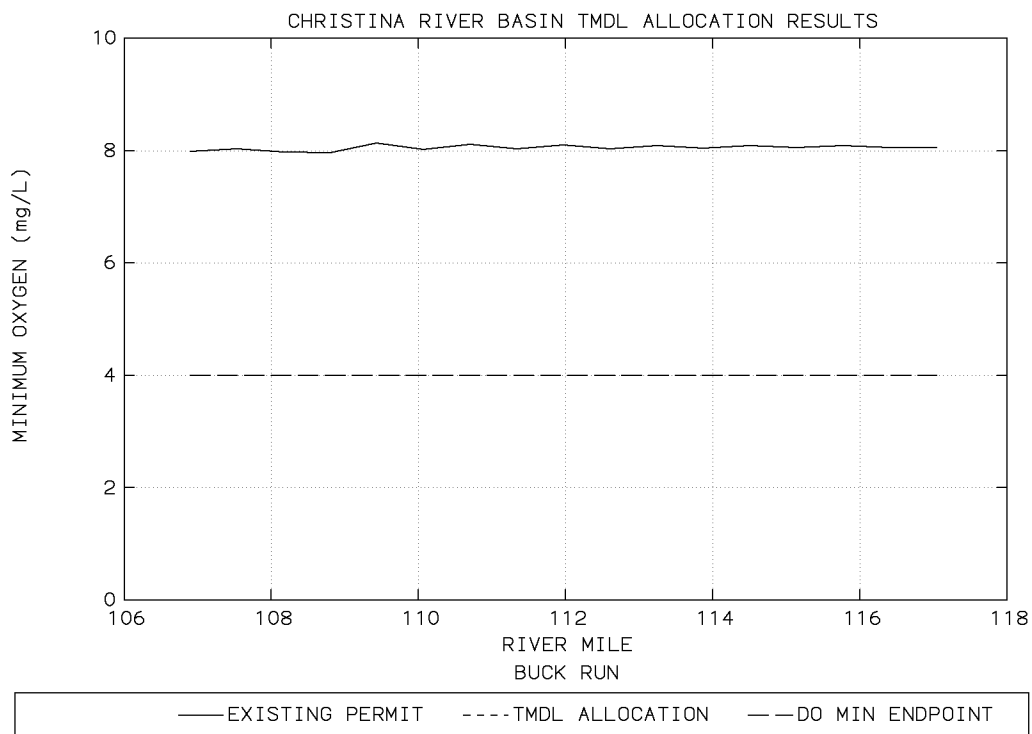


Figure A-8. Buck Run, minimum DO.

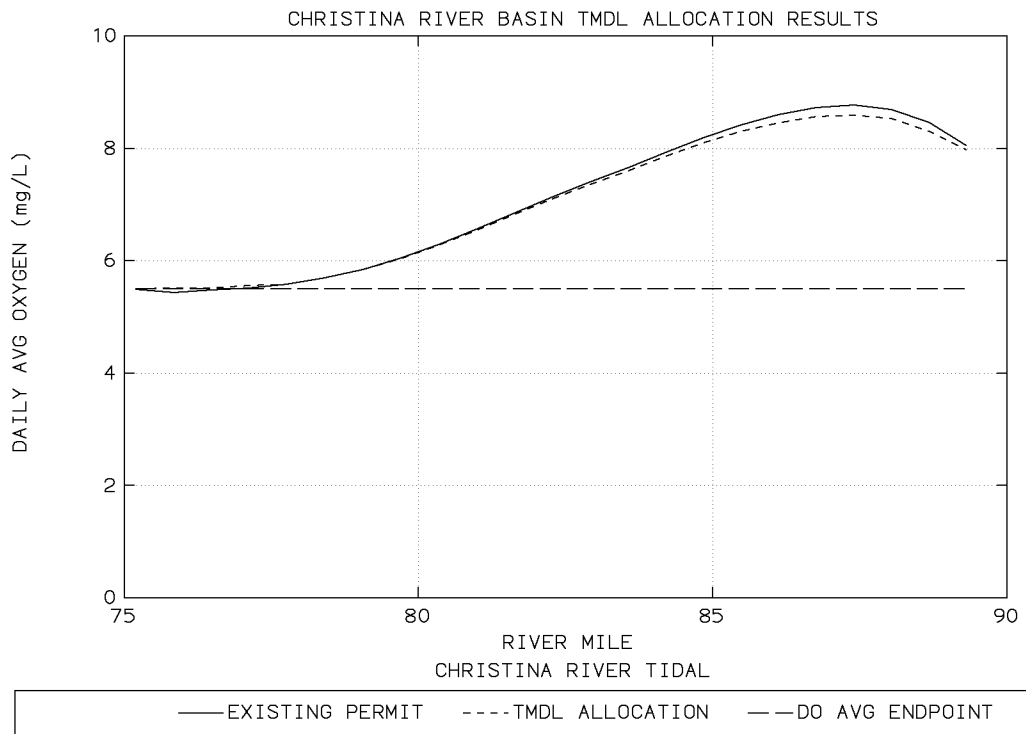


Figure A-9. Christina River (tidal), daily average DO.

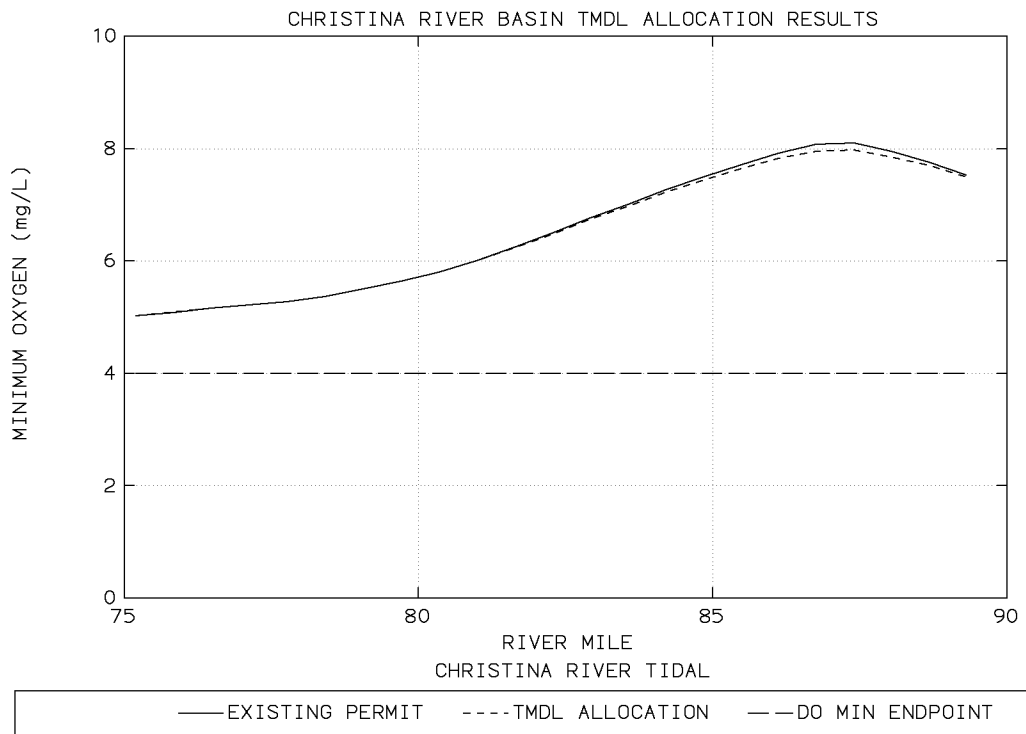


Figure A-10. Christina River (tidal), minimum DO.

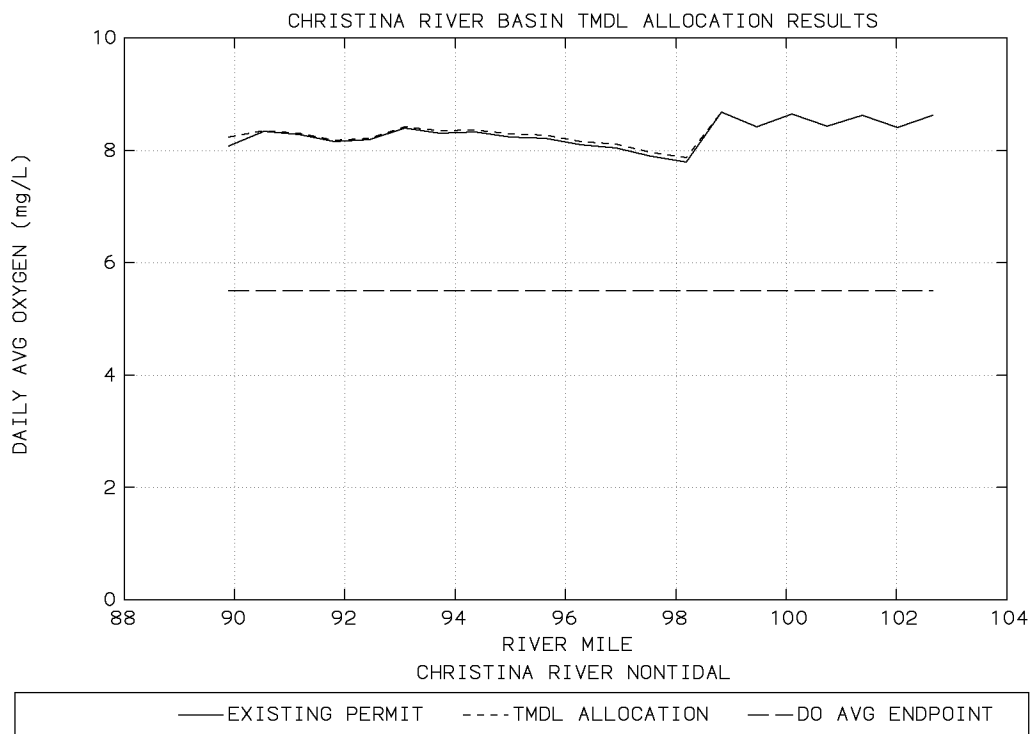


Figure A-11. Christina River (non-tidal), daily average DO.

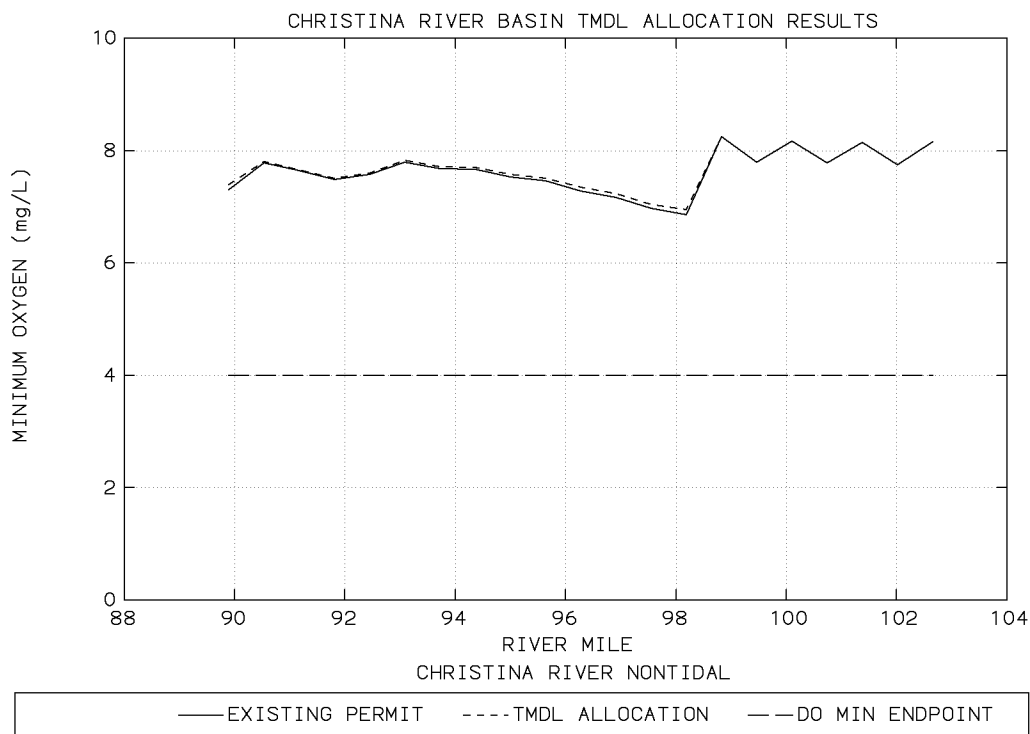


Figure A-12. Christina River (non-tidal), minimum DO.



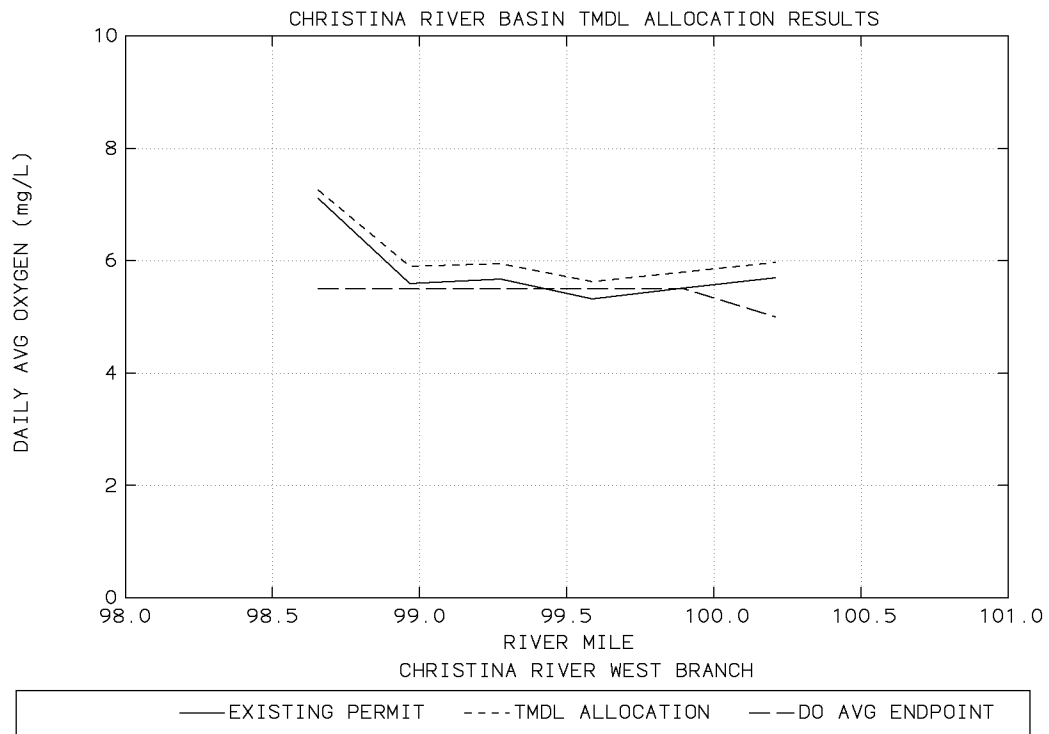


Figure A-13. Christina River West Branch, daily average DO.

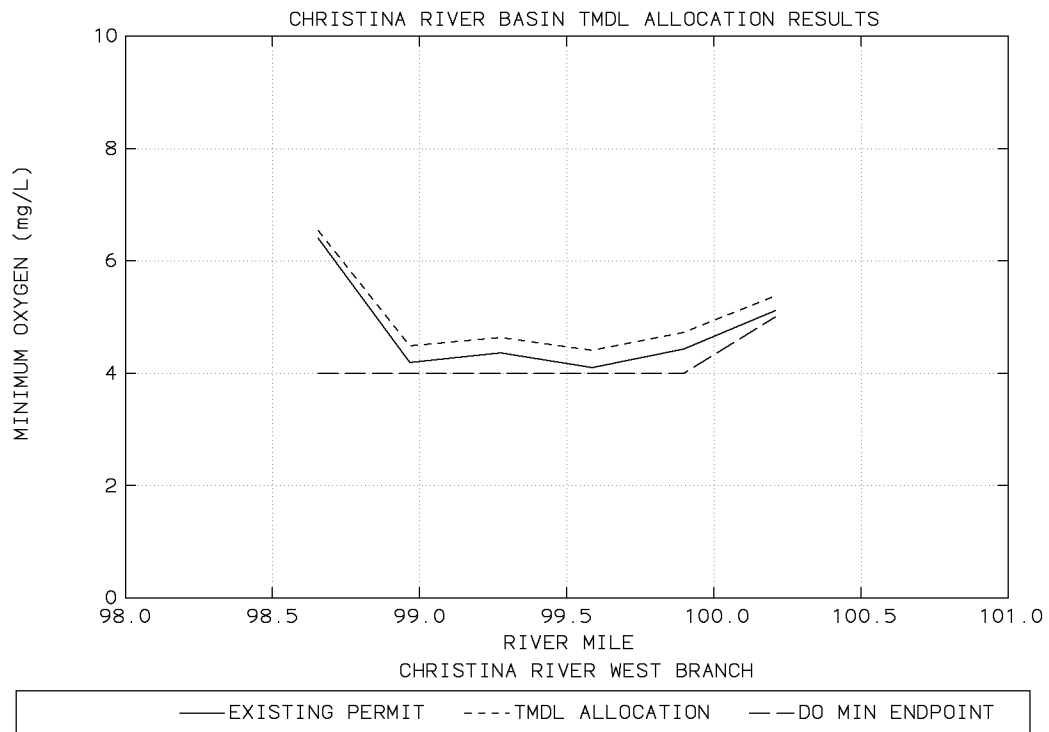


Figure A-14. Christina River West Branch, minimum DO.

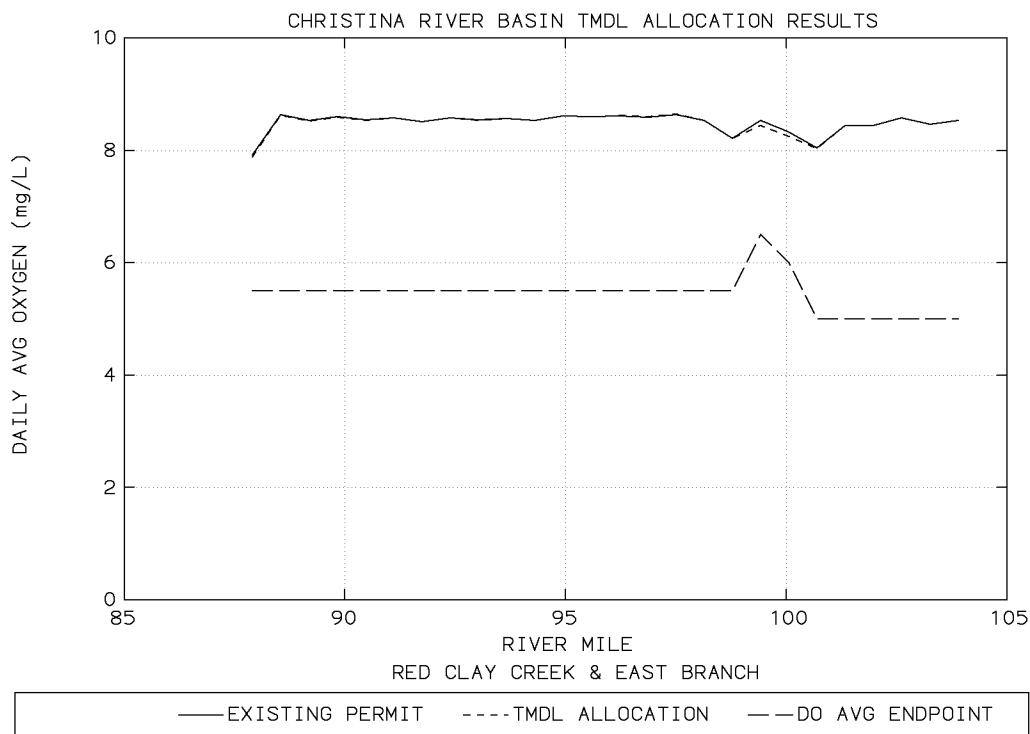


Figure A-15. Red Clay Creek main stem and East Branch, daily average DO.

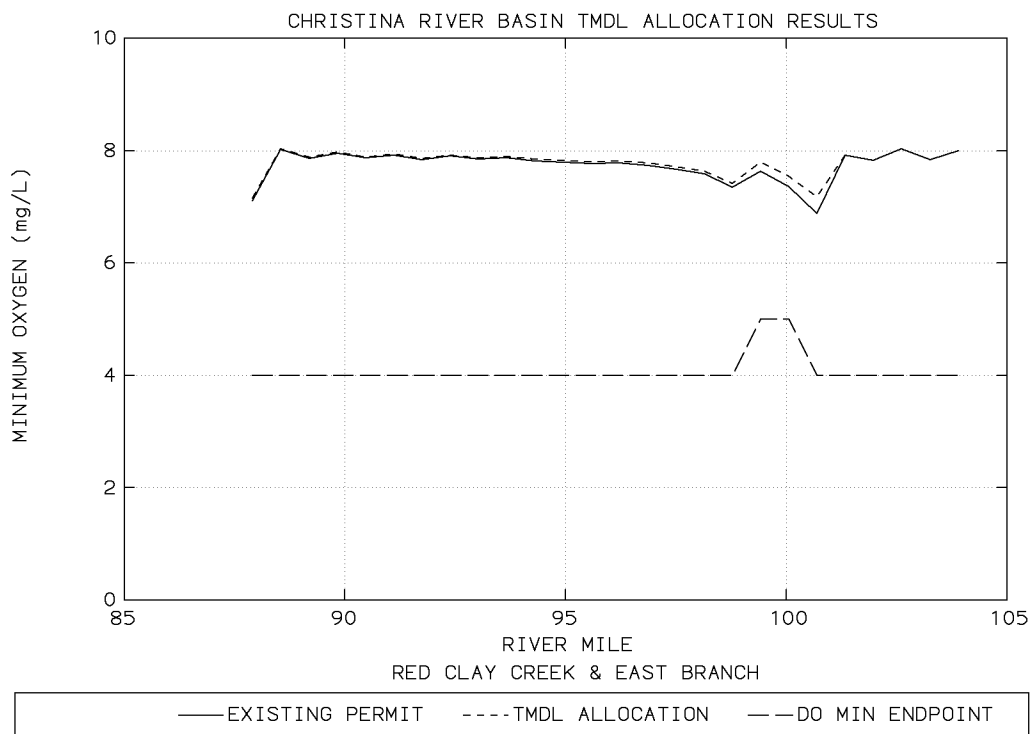


Figure A-16. Red Clay Creek main stem and East Branch, minimum DO.

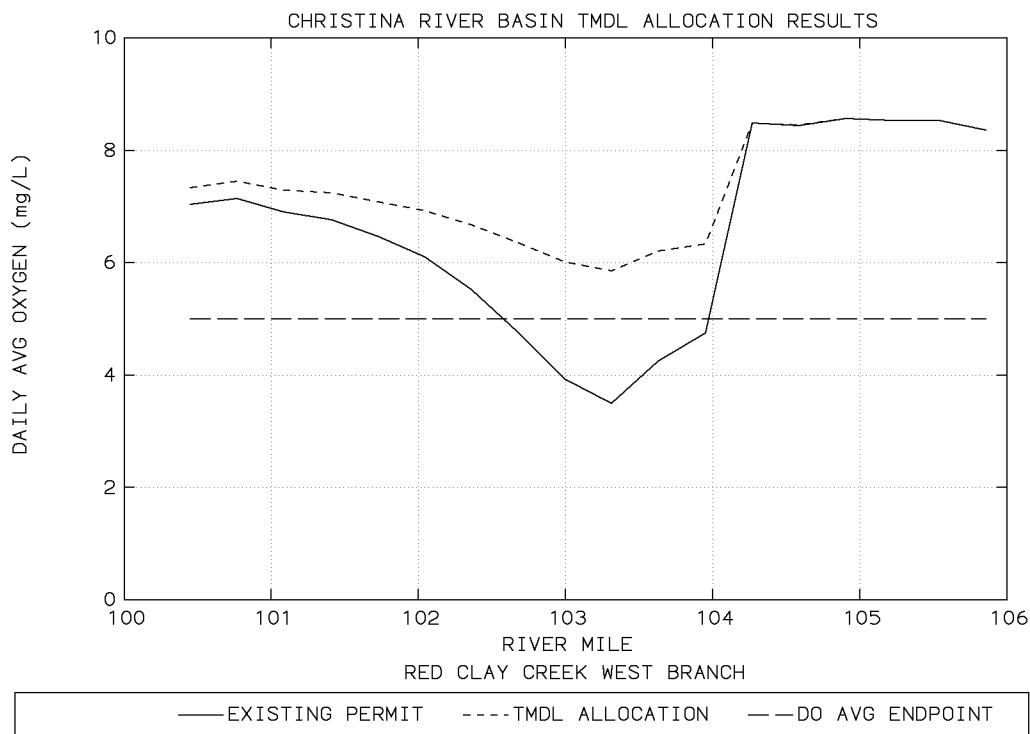


Figure A-17. Red Clay Creek West Branch, daily average DO.

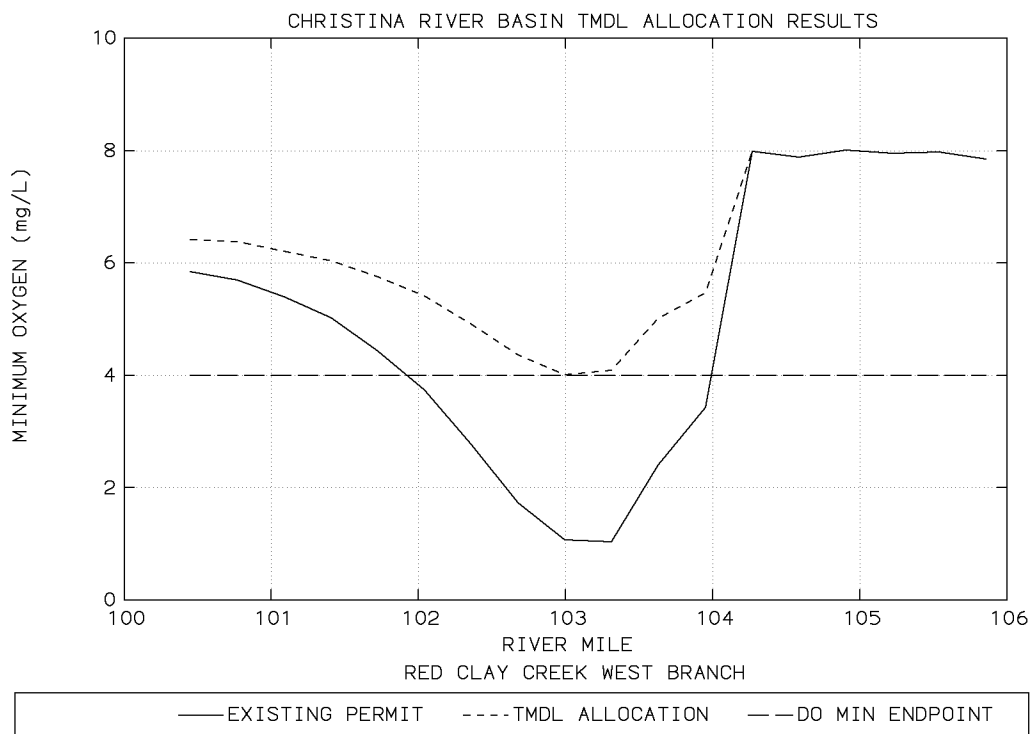


Figure A-18. Red Clay Creek West Branch, minimum DO.

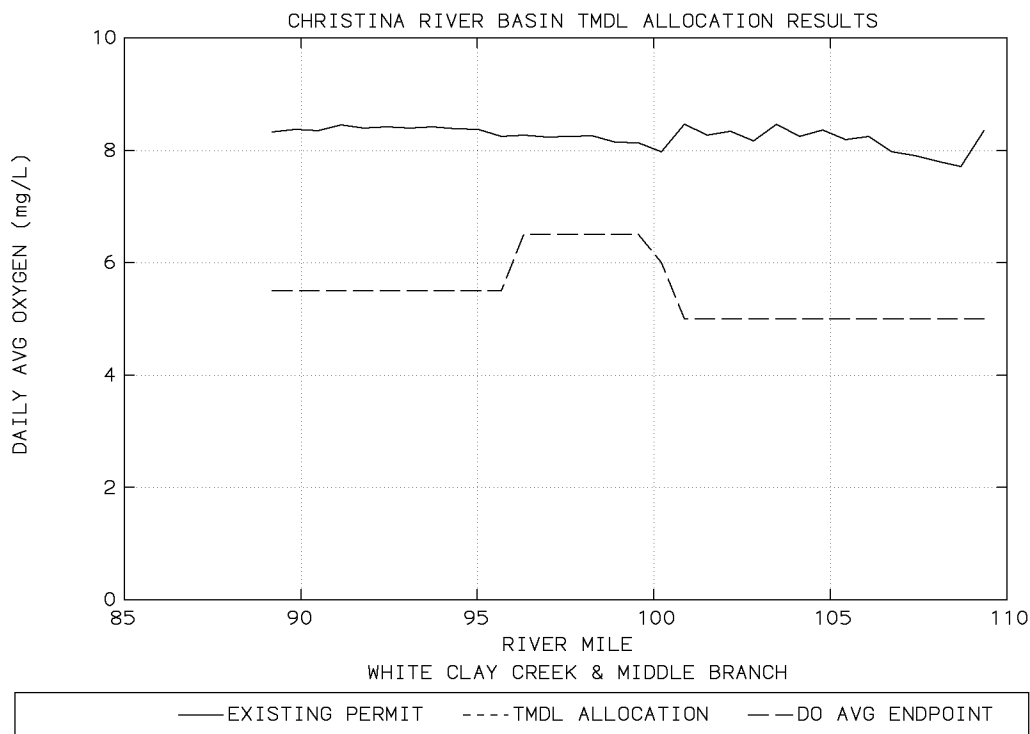


Figure A-19. White Clay Creek main stem and Middle Branch, daily average DO.

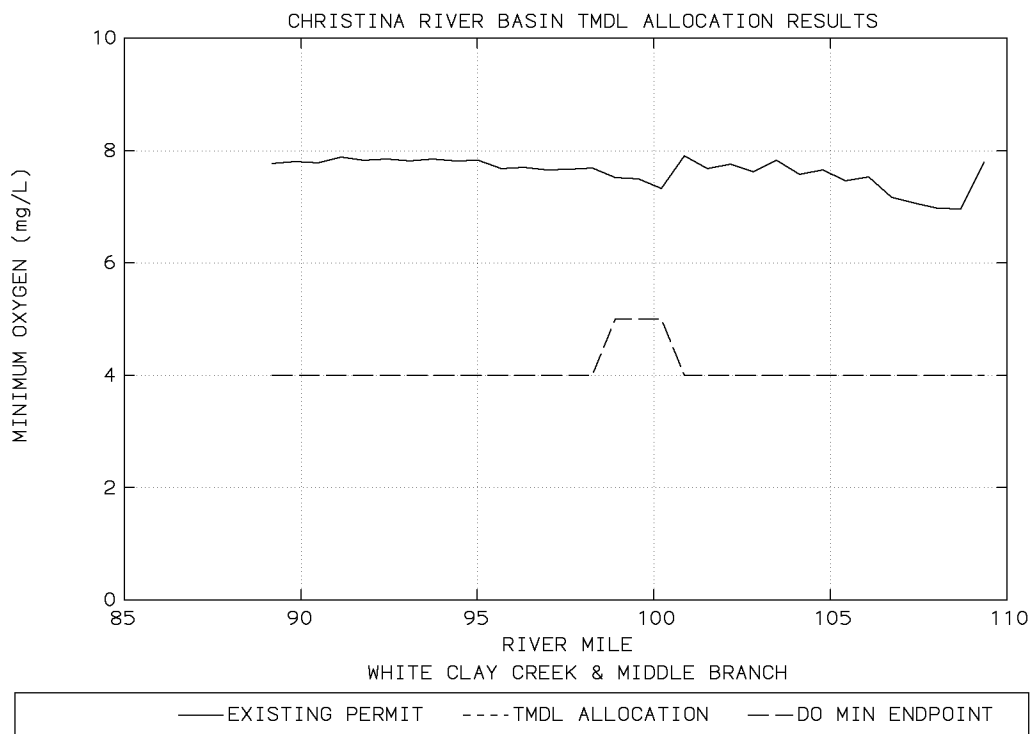


Figure A-20. White Clay Creek main stem and Middle Branch, minimum DO.

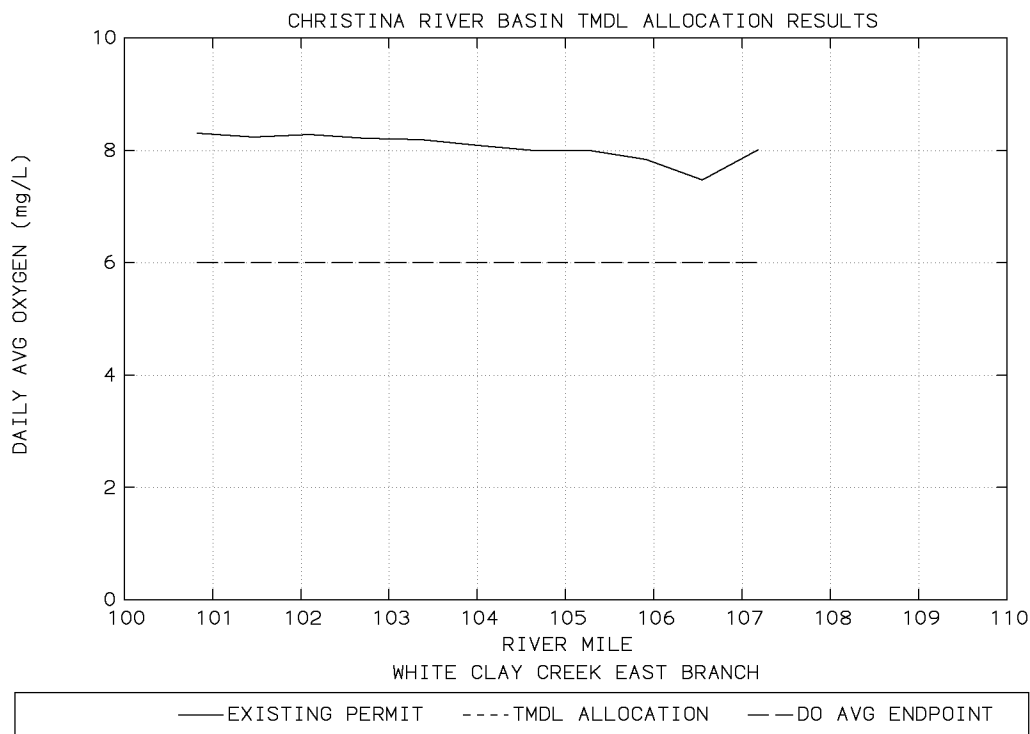


Figure A-21. White Clay Creek East Branch, daily average DO.

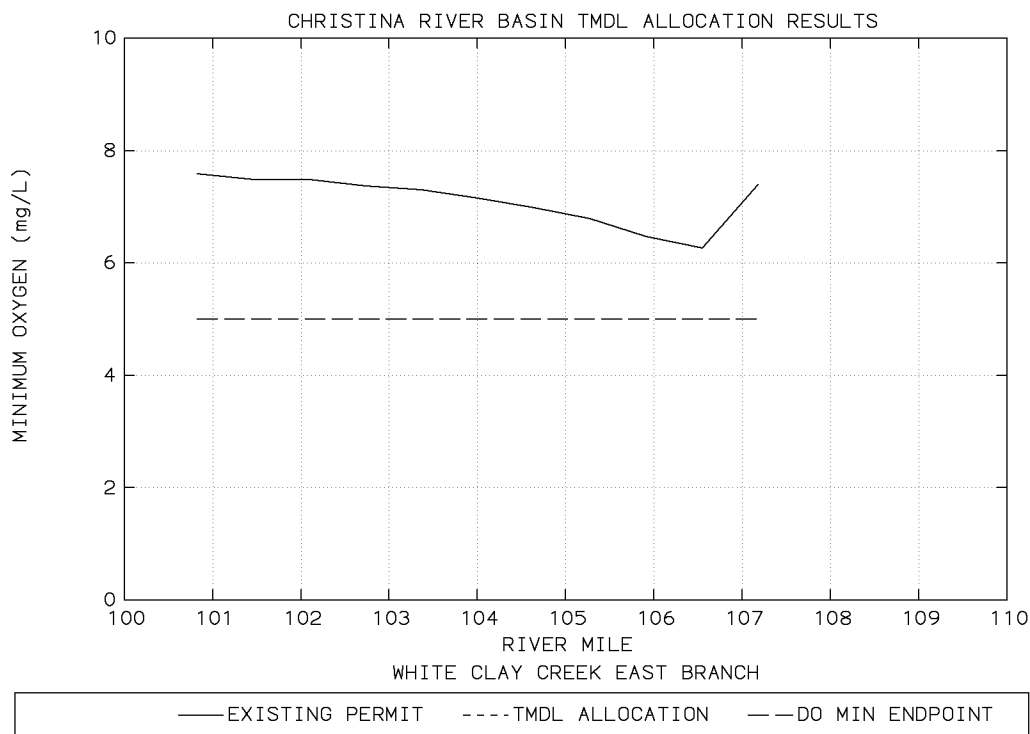


Figure A-22. White Clay Creek East Branch, minimum DO.

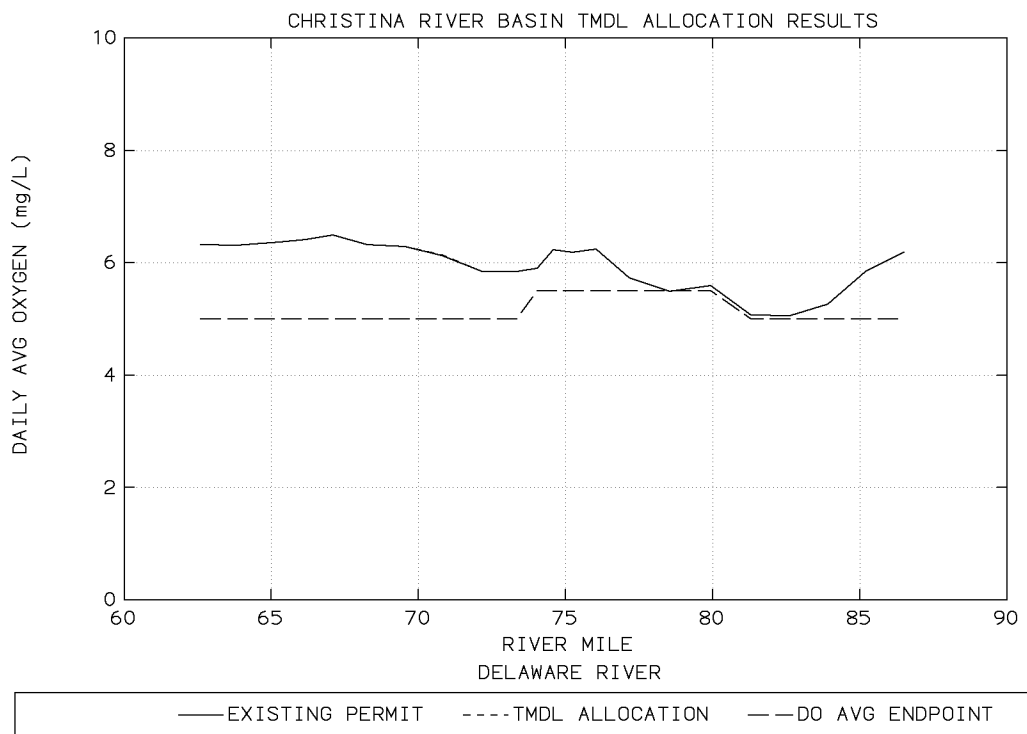


Figure A-23. Delaware River (Reedy Point to Chester), daily average DO.

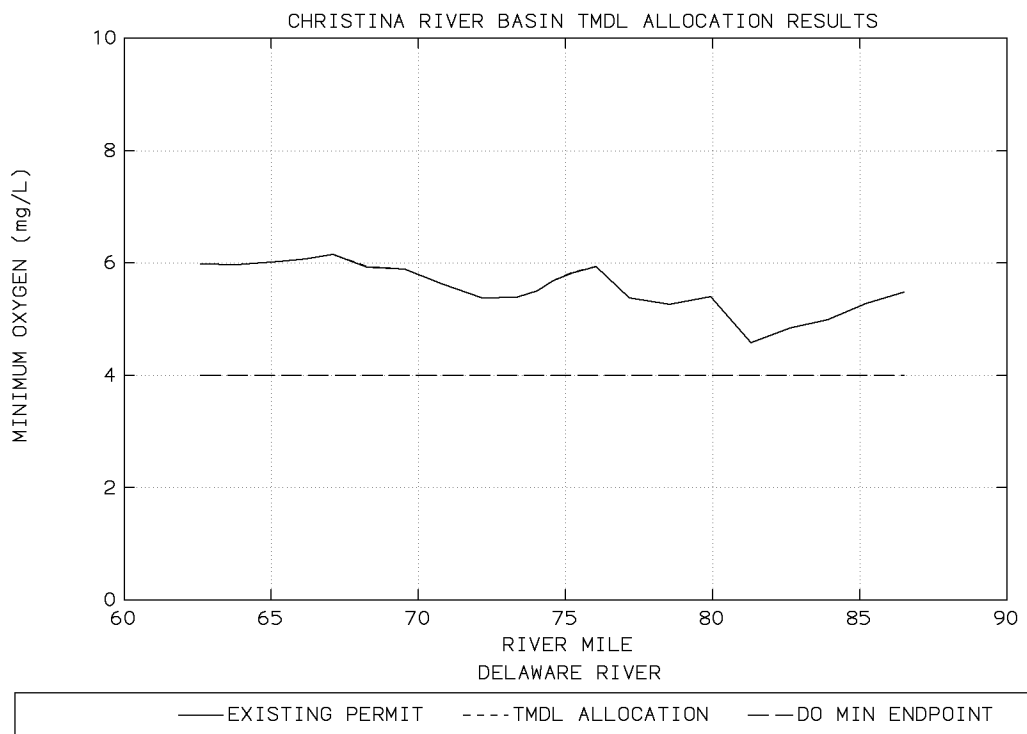


Figure A-24. Delaware River (Reedy Point to Chester), minimum DO.